

The logo of the University of Nevada Environmental Sciences is a circular seal. It features a central sunburst or star-like symbol. The words "UNIVERSITY OF NEVADA" are written in a circle around the top, and "ENVIRONMENTAL SCIENCES" is written around the bottom. A small dot is positioned between the top and bottom text on the left side.

# Ordnance Products, Inc. Superfund Site

Prioritization Panel  
Funding Request  
November 2013  
Groundwater Remedy

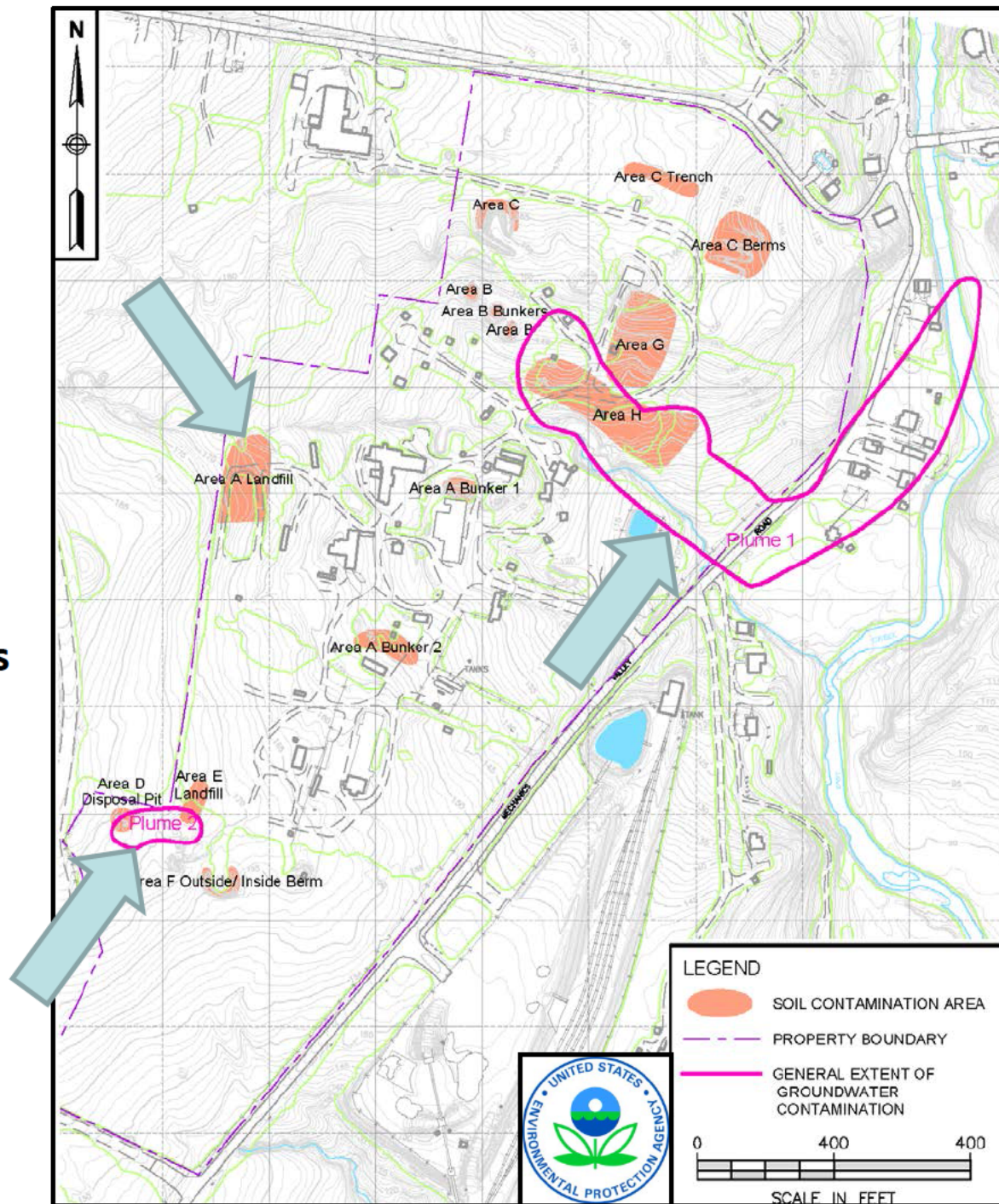
# Site Background

- Located on 95 acres near North East, Cecil County, Maryland;
- Ordnance Products, Inc. operated as an explosives and ammunition manufacturing facility from the late 1950's through the mid-1970's;
- Operated as the Mechanics Valley Trade Center, Inc. industrial complex from the early 1980's to the present.

# History of Contamination

- Eight known disposal areas – Areas A-H;
- Munitions and Explosives of Concern (MEC) present onsite in multiple disposal areas;
- Soil contaminated primarily with chlorinated volatile organic compounds (VOCs) and metals;
- Groundwater contamination by chlorinated VOCs present in two distinct areas (Plumes 1 and 2);
- Plume 2 groundwater also impacted by perchlorate;
- Residences impacted by Plume 1 (drinking water and vapor intrusion) to the east of the Site.

## Historic Disposal Areas and Groundwater Plumes





# Exemption 6 - PII

**Impacted Residents**

# Past Actions

- PRP Removal Action from 1988 through 1997;
  - » Removed hazardous materials, characterized site, installed treatment systems on five contaminated residential wells.
  - » Designed and installed treatment one-well groundwater extraction and treatment system, but never operated it;
  - » PRP ceased work in 1997 due to financial difficulties.
- EPA Removal Action in 1997;
  - » Removed surface water and sludge from five onsite impoundments;
  - » Continued operation and maintenance of residential well treatment systems.
- EPA Remedial Investigation/Feasibility Study from May 1999 through May 2006;
- Record of Decision in September 2006.

# Summary of Human Health Risks

- Current/future industrial worker;
  - » Plume 1 –  $1.34 \times 10^{-4}$
  - » Plume 2 –  $4.06 \times 10^{-3}$ , HI=2.56
- Current/future construction worker;
  - » Plume 1 – HI=2.0
  - » Plume 2 –  $6.60 \times 10^{-4}$ , HI=10.5
- Current/future resident (living adjacent to property);
  - » Plume 1 –  $2.97 \times 10^{-1}$ , HI=1290
  - » Plume 2 –  $6.71 \times 10^{-1}$ , HI=315

# 2006 Record of Decision

- Operation and maintenance of residential well treatment systems;
- Connection of impacted residences to public water supply;
- Extraction and treatment of contaminated groundwater;
- Screening and clearance of MEC from historic disposal areas;
- Excavation and offsite disposal or onsite amendment of contaminated soil from historic disposal areas presenting human health and ecological risks;
- Groundwater and residential monitoring;
- Institutional controls.

# Progress Since 2006 ROD

- Pre-Design Investigation from April 2008 through February 2013;
- State Superfund Contract signed September 22, 2010;
- Soil Remedial Action completed December 2010 through June 2011;
- Vapor intrusion investigation and mitigation completed July 2008 through September 2012;
- Record of Decision Amendment signed September 25, 2013;
  - » Plume 1 – Groundwater Extraction and Treatment;
  - » Plume 2 – In-Situ Bioremediation;
  - » Removed water line requirement;
  - » Required operation and maintenance of vapor intrusion mitigation systems.
- Groundwater Remedial Design completed September 30, 2013.

# Site Photographs



MEC Screening



Excavated MEC  
(Napalm Detonators)



# Site Photographs



Contaminated Soil Excavation  
(Area D)



VI Mitigation System Installation

# Groundwater Remedial Design

- Two separate groundwater contaminant plumes;
  - » Plume 1 – Northern portion of Site, extends offsite, VOCs only;
  - » Plume 2 – Southern portion of Site, contained onsite, VOCs and perchlorate.
- Pre-Design Investigation;
  - » Additional monitoring and extraction/injection wells installed at both plumes;
  - » Long-term pumping tests completed at both plumes;
  - » Existing groundwater treatment system building evaluated for reuse;
  - » Treatability study conducted to evaluate in-situ bioremediation in Plume 2.

# Site Photographs



Bioremediation Treatability Study  
Equipment



Existing Groundwater Treatment  
System Building

# Groundwater Remedial Action

## ➤ Plume 1:

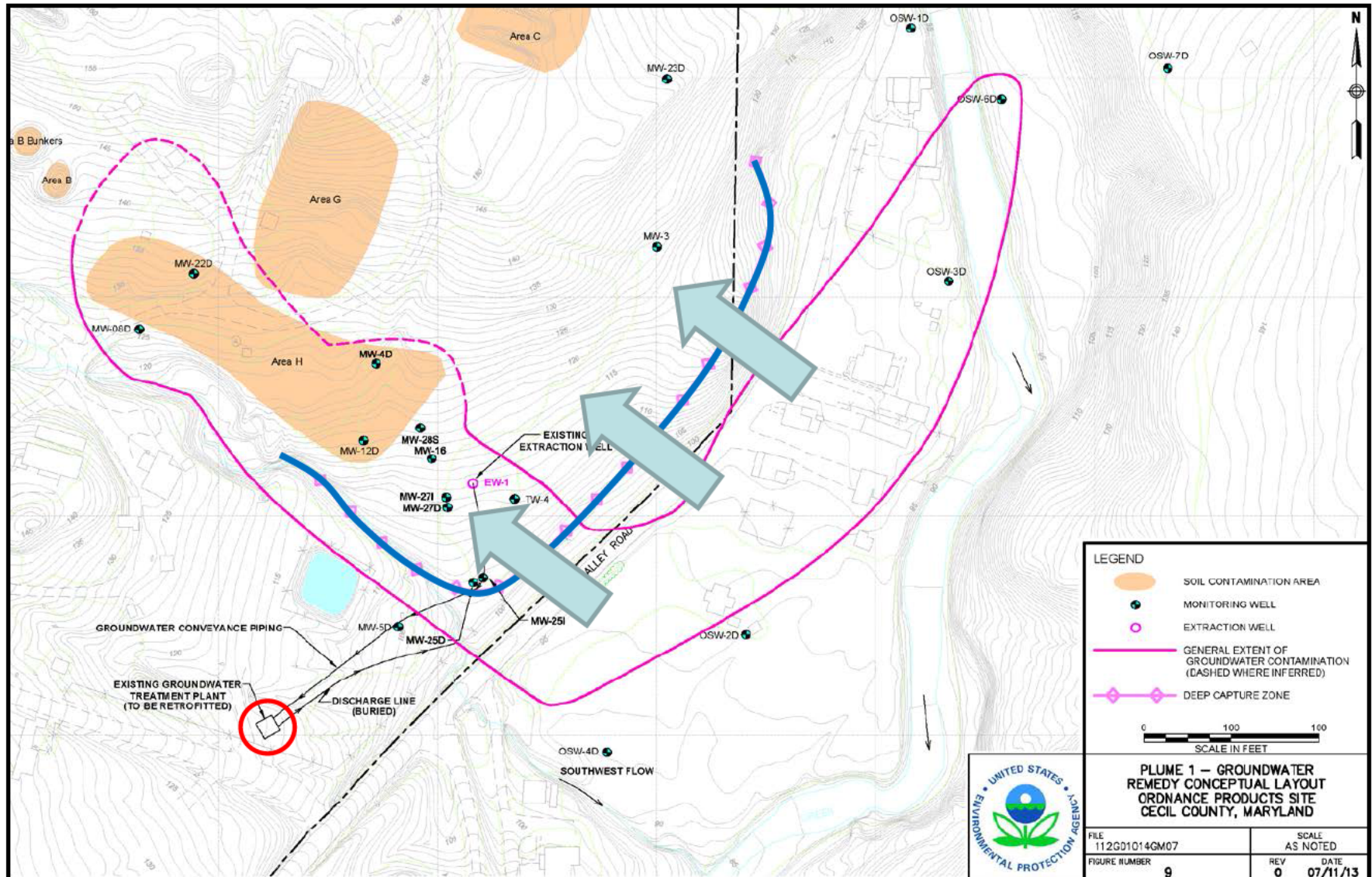
- » Groundwater extraction and treatment;
- » Discharge to surface water;
- » Performance monitoring.

## ➤ Plume 2:

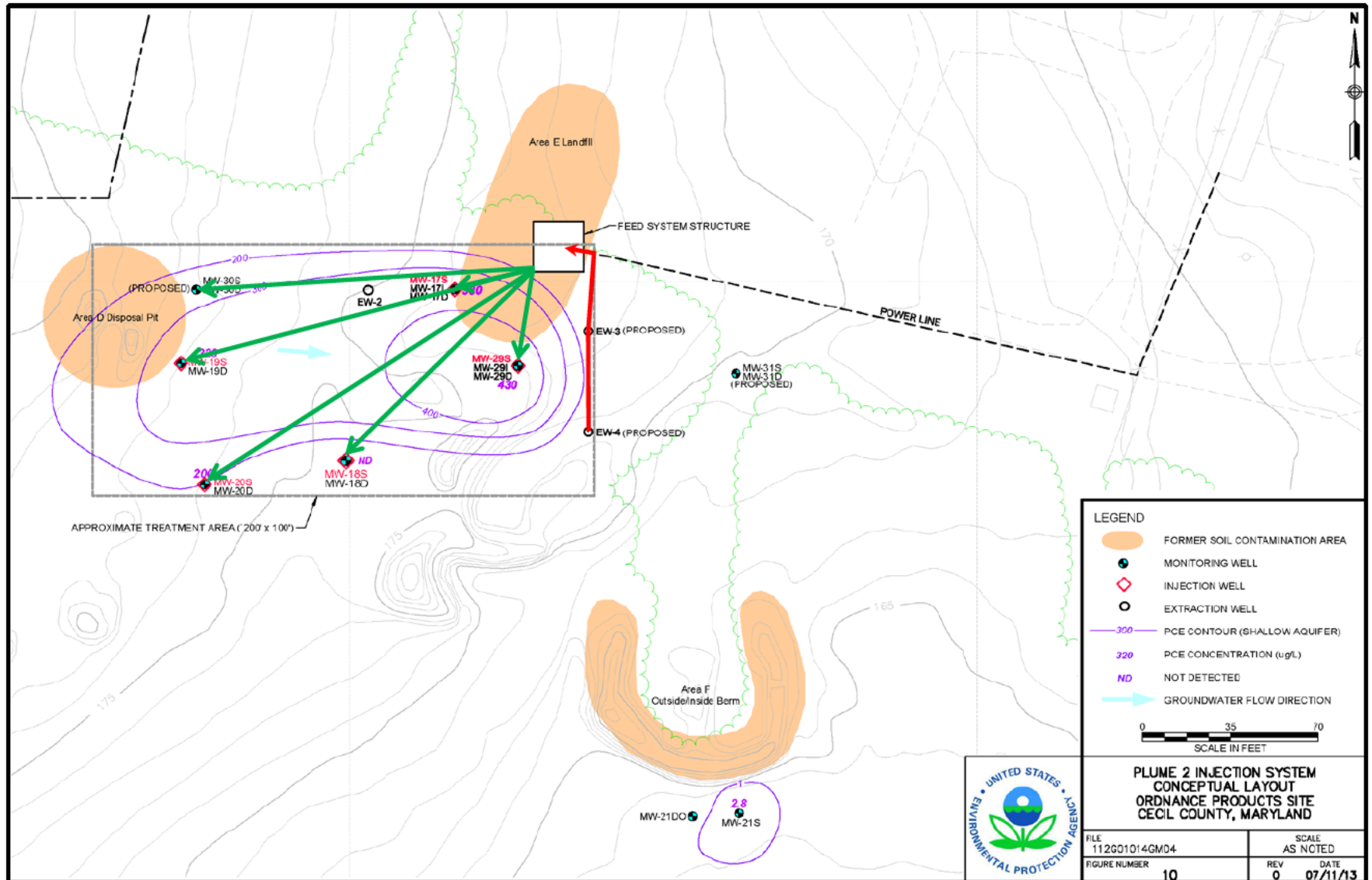
- » In-situ bioremediation via a recirculation system;
- » Potential bioaugmentation and/or buffering;
- » Performance monitoring.



# Plume 1 Conceptual Layout



# Plume 2 Conceptual Layout





# Cost Summary

➤ Capital (FY14):	\$ 828,468
» LTRA (FY15)	\$ 227,482
» LTRA (FY16)	\$ 169,795
» LTRA (FY17)	\$ 156,795
» LTRA (FY18 & 19)	\$ 116,652
» LTRA (FY20 to 25)	\$ 101,952
➤ Present Worth:	\$ 2,005,718
➤ State Contribution:	\$ 200,572



# Schedule

- 100% Remedial Design: Complete
- SSC Amendment: December 2013
- Obligate Funds: January 2014
- On-Site Construction Start: February 2014
- **Construction Completion: September 2014**